



First record of *Dipsas variegata* (Duméril, Bibron & Duméril, 1854) (Serpentes, Dipsadidae) from the state of Rio de Janeiro, Brazil

Luiz Eduardo Mendonça Regio^{1,2}, Jorge Antônio Lourenço Pontes¹

1 Grupo de Estudos Interdisciplinares do Ambiente, Programa de Pós-Graduação em Ensino, Ambiente e Sociedade, Faculdade de Formação de Professores, Universidade do Estado do Rio de Janeiro. Rua Francisco Portela, 1470, 24435-005, Patronato, São Gonçalo, RJ, Brazil. **2** Parque Estadual da Pedra Branca, Diretoria de Áreas Protegidas, Instituto Estadual do Ambiente do Rio de Janeiro. Avenida Venezuela, 110, 20081-312, Saúde, Rio de Janeiro, RJ, Brazil.

Corresponding author: Luiz Eduardo Mendonça Regio, luizregio@hotmail.com

Abstract

We present the first record of *Dipsas variegata* (Duméril, Bibron & Duméril, 1854) from the state of Rio de Janeiro. We collected this species on 25 July 2018 in Pedra Branca State Park, municipality of Rio de Janeiro. The new record is approximately 214 km from the nearest previously location in the municipality of Ilhabela, state of São Paulo. The specimen was deposited in the Museu Nacional da Universidade Federal do Rio de Janeiro (MNRJ). This record is part of a study on snakes in the park and expands the distribution of *D. variegata* to the Rio de Janeiro state.

Keywords

Atlantic Forest, geographic distribution, range extension, Squamata

Academic editor: Josué Anderson Rêgo Azevedo | Received: 22 July 2020 | Accepted: 20 October 2020 | Published 11 November 2020

Citation: Regio LEM, Pontes JAL (2020) First record of *Dipsas variegata* (Duméril, Bibron & Duméril, 1854) (Serpentes, Dipsadidae) from the state of Rio de Janeiro, Brazil. Check List 16 (6): 1531–1535. <https://doi.org/10.15560/15.6.1531>

Introduction

The Atlantic Forest in the state of Rio de Janeiro, Brazil, is fragmented due to deforestation and urban advance of large coastal cities. Species have been lost as a result, possibly even before they were known to science (e.g., Bergallo et al. 2000; Rocha et al. 2003; Mittermeier et al. 2005; Fundação SOS Mata Atlântica and INPE 2018). Despite its history of occupation, the city of Rio de Janeiro still has well-preserved forest fragments housing a considerable richness of reptiles (Pontes and Rocha 2008; Pontes et al. 2009, 2015). One of the largest protected fragments in Rio is Pedra Branca State Park, occupying about 10% of the area of the municipality (12,491.72 ha) (Castro 2015). Currently, 142 species of snakes are known to occur in the Atlantic Forest

(Marques et al. 2019), and at least 92 species of these have been registered in the state of Rio de Janeiro (Costa and Bérnills 2018) and 28 species only in the municipality of Rio de Janeiro (Pontes and Rocha 2008; Pontes et al. 2009, 2015).

The Neotropical snail-eating snake, *Dipsas variegata* (Duméril, Bibron & Duméril, 1854), is terrestrial, nocturnal, malacophagous, and oviparous, as are other species in the family Dipsadidae (Argôlo 2004; Marques et al. 2019). This species has a wide geographical distribution in South America, through the Amazon Forest and the Atlantic Forest. Despite its occurrences in the other states of southeastern Brazil, *D. variegata* had not previously been registered in Rio de Janeiro (Costa and Bérnills

2018; Nogueira et al. 2019). The present study addresses the first record of the snail-eating snake *Dipsas variegata* (Duméril, Bibron & Duméril, 1854) in Rio de Janeiro.

Methods

Occasional sampling for snakes were performed during the study on snakes in the neighborhood of Vargem Grande, near an outpost of the Pedra Branca State Park in the municipality of Rio de Janeiro, southeastern Brazil, in an area occupied by a traditional community of descendants of African slaves (Cafundá Astrogilda Quilombola ; Fig. 1).

Biometric measurements of the live specimen were made using a measuring tape graduated in mm and a 10 g Pesola® scale. The specimen was then euthanized with the use of lidocaine (7%), fixed in 10% formalin, and packed in a bottle with 70% alcohol (sensu Foster 2012).

The identification of the specimen was confirmed by comparing of the scale count, color patterns of the specimens with the available species diagnoses (Peters

1960; Peters and Orejas-Miranda 1970; Porto and Fernandes 1996). Taxonomic identification was performed by Paulo Passos from the Museu Nacional, where the specimen was deposited under the number MNRJ 26914. This study received scientific research authorization by? INEA no. 058/2018.

Results

New record. BRAZIL • 1 ♂, snouth–vent length = 258 mm, mass = 4.85 g; *Cafundá Astrogilda Quilombola* community, in *Parque Estadual da Pedra Branca*, Vargem Grande, Rio de Janeiro, RJ; 22°57'12"S, 043°29'24"W, WGS84 datum; 195 m a.s.l.; 25 July 2018; Luiz Eduardo Mendonça Regio leg.; undergrowth vegetation, a formation of anthropogenic vegetation and a monoculture of banana trees (*Musa × paradisiaca* L.); MNRJ 26914 (Fig. 1).

This record expanded the geographic distribution area of the species to the coast of Rio de Janeiro state (Fig. 2).

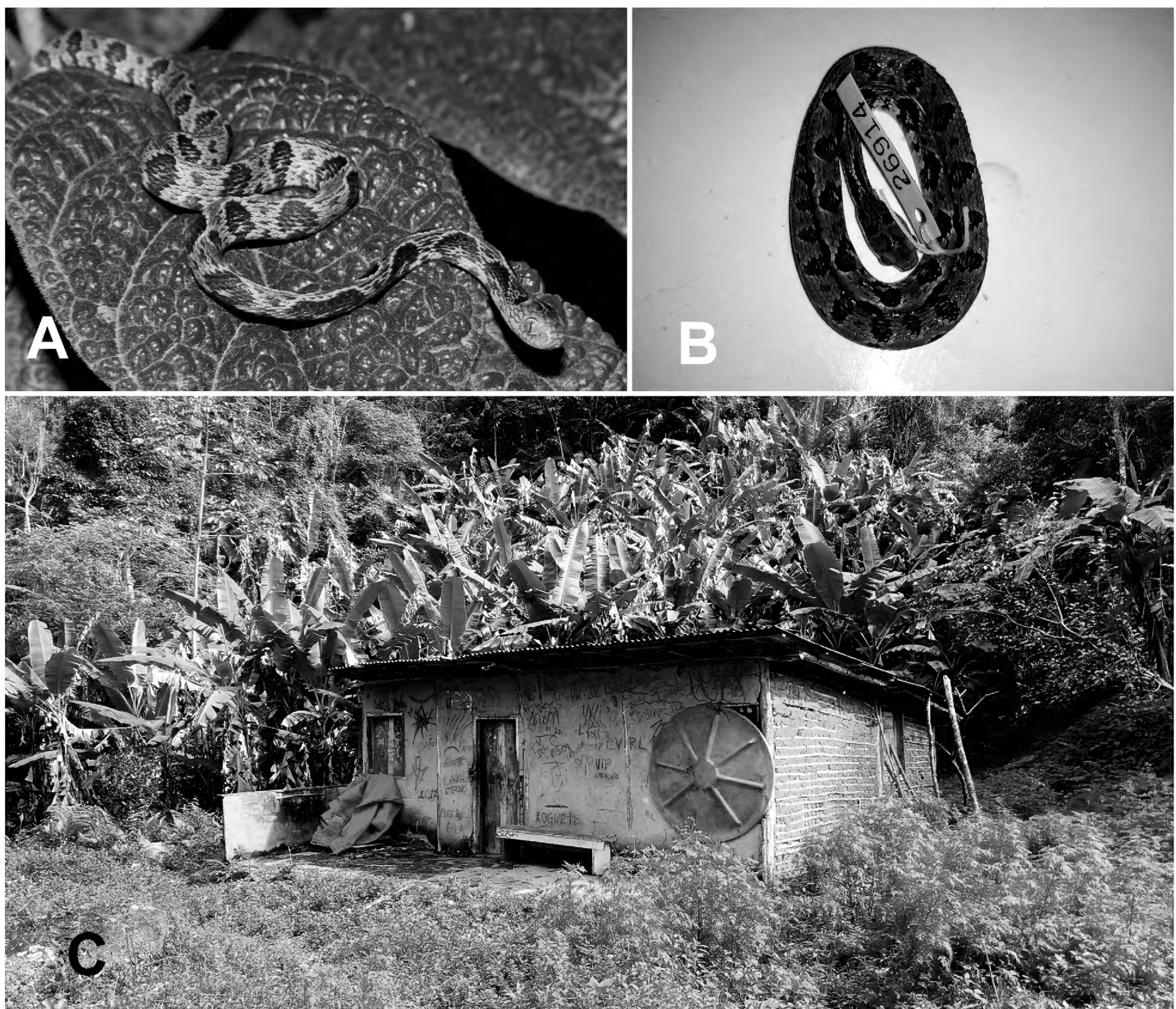


Figure 1. Female specimen of *Dipsas variegata* (Duméril, Bibron & Duméril, 1854). **A.** In life. **B.** Specimen deposited in the herpetological collection of the Museu Nacional (MNRJ 26914). **C.** Habitat in Pedra Branca State Park, Rio de Janeiro. Photos by Luiz Regio and Jorge Pontes.

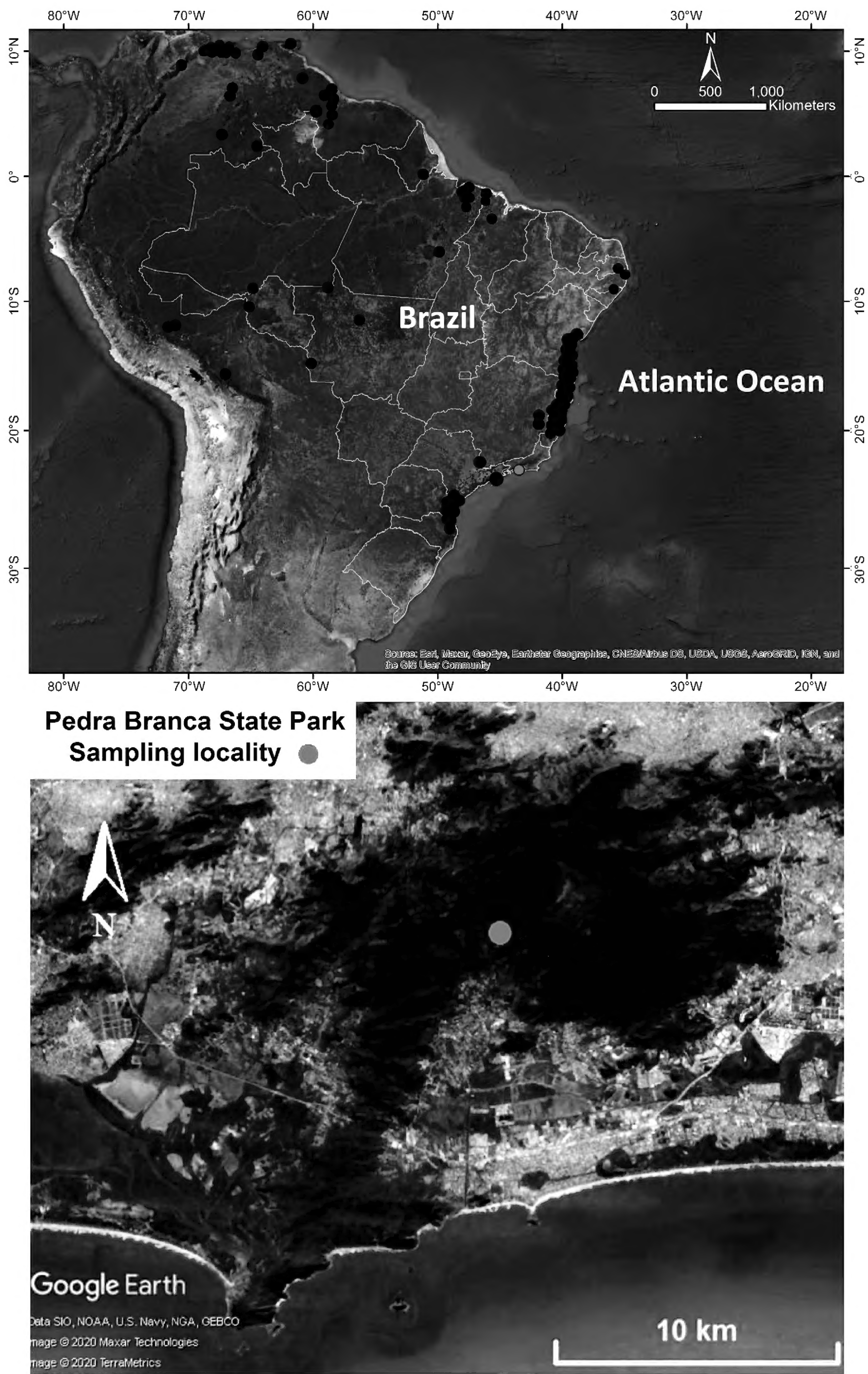


Figure 2. Maps showing the distribution of *Dipsas variegata* (Duméril, Bibron & Duméril, 1854): black dots = previous records (Nogueira et al. 2019); red dot = new record from Pedra Branca State Park, Rio de Janeiro, Rio de Janeiro.

Identification. *Dipsas variegata* can be distinguished from its congeners by the first of the dorsal spots, right on the neck, which is not very clear and defined like the other species and by the hemipenial structure, specially by the distribution and shape of the spines. The dorsal patches invade only laterally the belly; belly irregularly stained cream dark; absent pre-ocular; two post-ocular; smooth back without apical pit; ventrals 173–185; whole anal; subcaudal scales 71–85, divided. Maximum length of around 800 mm, with a head distinct from the body; large eyes with vertical pupils; back of the head brown; body laterally compressed; body color light brown with dark brown rhomboid spots, on the dorsal region with lighter colored border; some of these spots have a slightly lighter center (Peters 1960; Peters and Orejas-Miranda 1970; Porto and Fernandes 1996; Argôlo 2004; Farias 2016).

Discussion

The geographic distribution of the species *Dipsas variegata* in South America covers Bolivia, Brazil, Peru, Suriname and Trinidad. In Brazil it is found in 16 states (Roraima, Amapá, Amazonas, Pará, Rondônia, Mato Grosso, Maranhão, Paraíba, Pernambuco, Alagoas, Bahia, Espírito Santo, Minas Gerais, São Paulo, Paraná, and Santa Catarina) (Peters and Orejas-Miranda 1970; Porto and Fernandes 1996; Costa and Bérnills 2018; Nogueira et al. 2019). This record increased the number of species in the municipality to 29 species and in the state to 93 species (Pontes et al. 2015; Costa and Bérnills 2018). The previous record closest to the state of Rio de Janeiro for *D. variegata* was in the Island of São Sebastião, municipality of Ilhabela, located on the north coast of the state of São Paulo (23°45' to 23°55'S and 045°17' to 045°24'W) (Centeno et al. 2008). Therefore, the gap of occurrence records for the state of Rio de Janeiro, was not likely (Fig. 2). *Dipsas variegata* inhabits ombrophilous forests at low altitudes (Porto and Fernandes 1996; Nogueira et al. 2019) where it can be found on both the vegetation and on the ground, with nocturnal habits, and feeding on mollusks (Marques et al. 2019). The specimen was collected close to an environment similar to that described in the mentioned literature, in a plantation area. We believe that the record in this anthropized environment should be attributed to the proximity to an ombrophilous forest area and the occurrence of its prey in this site.

After the first individual of *D. variegata* was collected, another one was later found in the same location, which was not collected. This record expanded the geographic distribution area of the species to the coast of Rio de Janeiro state, which was expected, and increased the list of snake species which occur in the municipality and in the state (Pontes et al. 2015; Costa and Bérnills 2018; Nogueira et al. 2019). The species was only listed by Oliveira et al. (2020), but there was no mention of the

discovery of *D. variegata*, or commentary clarifying the expansion of its geographical distribution.

This record and others (Pontes and Rocha 2008; Castro et al. 2020) demonstrates the importance of protecting and studying forest fragments in urban areas and the need to implement local conservationist policies.

Acknowledgements

We thank the Faculty of Teacher Training FFP/UERJ and the Graduate Program in Teaching Science, Environment and Society/PPGEAS. We also thank the entire body of park guards at Pedra Branca State Park, Pau da Fome, Piraquara, Quilombola, and Camorim headquarters; the Cafundá Astrogilda Quilombola community, which contributed to the work in the region; the State Environment Institute (INEA) for issuing authorization; all those responsible for the herpetological collection of the Museu Nacional, Rio de Janeiro, especially Dr Paulo Passos; and Felipe Noronha for his help with the map. We also thank the reviewers and editor Josué Anderson Rêgo Azevedo.

Authors' Contributions

LEMR collected the specimen; both authors studied the specimen, visited scientific collections, and wrote the manuscript.

References

- Argôlo AJS (2004) As serpentes dos cacauais do sudeste da Bahia. Editus, Ilhéus, 33 pp.
- Bergallo HG, Rocha CFD, Alves MAS, Van Sluys M (2000) A fauna ameaçada de extinção do Estado do Rio de Janeiro. EdUERJ, Rio de Janeiro, 168 pp.
- Castro TM, Chaves FG, Bérnills RS, Silva-Soares T (2020) First record of *Dipsas mikanii* Schlegel, 1837 (Serpentes, Dipsadidae) from Espírito Santo state, Brazil. Check List 16 (3): 681–684. <https://doi.org/10.15560/16.3.681>
- Castro PF (2015) Atlas das unidades de conservação do estado do Rio de Janeiro. Metalivros, São Paulo, 172 pp.
- Centeno FC, Sawaya RJ, Marques OAV (2008) Snake assemblage of Ilha de São Sebastião, southeastern Brazil: comparison to mainland. Biota Neotropica 8 (3): 63–68. <https://doi.org/10.1590/S1676-06032008000300005>
- Costa HC, Bérnills RS (2018) Répteis do Brasil e suas Unidades Federativas: lista de espécies. Herpetologia Brasileira 7 (1): 11–57.
- Farias RES (2016) Taxocenose de serpentes em ambientes aquáticos de áreas de altitude em Roraima (Squamata: Serpentes). MSc dissertation, Instituto Nacional de Pesquisas da Amazônia, Brazil, 185 pp.
- Foster MS (2012) Preparing reptiles as voucher specimens. In: McDiarmid RW, Foster MS, Guyer C, Gibbons JW, Chernoff N (Eds) Reptile biodiversity: standard methods for inventory and monitoring. University of California Press, Berkeley, California, 95–125.
- Fundação SOS Mata Atlântica, Instituto Nacional de Pesquisas Espaciais (INPE) (2018) Atlas dos remanescentes florestais da Mata Atlântica. Relatório técnico (2017/2018), SOS Mata Atlântica e Instituto Nacional de Pesquisas Espaciais, São Paulo, 65 pp. https://www.sosma.org.br/wp-content/uploads/2019/05/Atlas-mata-atlantica_17-18.pdf. Accessed on: 2020-3-22.

- Marques OAV, Eterovic A, Sazima I (2019) Serpentes da Mata Atlântica: guia ilustrado para as florestas costeiras do Brasil. PONTO A, Cotia, São Paulo, 319 pp.
- Mittermeier RA, Gil PR, Hoffman M, Pilgrim J, Brooks T, Mittermeier CG, Lamoreux J, Fonseca GAB (2004) Hotspots revisited: Earth's biologically richest and most endangered ecoregions. CEMEX, Mexico City, 432 pp.
- Nogueira CC, Argôlo AJS, Arzamendia V, Azevedo JA, Barbo FE, Bérnils RS, Bolochio BE, Borges-Martins M, Brasil-Godinho M, Braz H, Buononato MA, Cisneros-Heredia DF, Colli GR, Costa HC, Franco FL, Giraudo A, Gonzalez RC, Guedes T, Hoogmoed MS, Marques OAV, Montingelli GG, Passos P, Prudente ALC, Rivas GA, Sanchez PM, Serrano FC, Silva Jr NJ, Strüssmann C, Vieira-Alencar JPS, Zaher H, Sawaya RJ, Martins M (2019) Atlas of Brazilian Snakes: verified point-locality maps to mitigate the Wallacean shortfall in a megadiverse snake fauna. *South American Journal of Herpetology* 14 (Special Issue 1): 1–274. <http://doi.org/10.2994/SAJH-D-19-00120.1>
- Oliveira JCF, Gonzalez RC, Passos P, Vrcibradic D, Rocha CFD (2020) Non-avian reptiles of the state of Rio de Janeiro, Brazil: status of knowledge and commented list. *Papéis Avulsos de Zoologia* 60: e20206024. <http://doi.org/10.11606/1807-0205/2020.60.24>
- Peters JA (1960) The snakes of the subfamily Dipsadinae. Miscellaneous Publications of the Museum of Zoology, University of Michigan 114: 1–224.
- Peters JA, Orejas-Miranda B (1970) Catalogue of the Neotropical Squamata part I. Snakes. United States National Museum Bulletin 297: i–viii, 1–347 pp.
- Pontes JAL, Rocha CFD (2008) Serpentes da Serra do Mendanha, Rio de Janeiro, RJ: ecologia e conservação. Technical Books, Rio de Janeiro, 147 pp.
- Pontes JAL, Pontes RC, Rocha CFD (2009) The snake community of Serra do Mendanha, in Rio de Janeiro State, southeastern Brazil: composition, abundance, richness and diversity in areas with different conservation degrees. *Brazilian Journal of Biology* 69 (3): 795–804. <https://doi.org/10.1590/S1519-69842009000400006>
- Pontes JAL, Pontes RC, Rocha RF, Lindenberg PM, Silva KP, Santos WA, Lemos NA, Hassan PGA, Alves AO, Lopes LFBA, Perro LCT, Boldrini AP, Nunes, ECF, Costa LF, Kisling RW, Rocha CFD (2015) Unidades de conservação da cidade do Rio de Janeiro: hotspots da herpetofauna carioca. In: Pontes JAL (Ed.) Biodiversidade carioca: segredos revelados, 1ª ed. Technical Books, Rio de Janeiro, 176–194.
- Porto M, Fernandes R (1996) Variation e natural history of the snail-eating Snake *Dipsas neivai* (Colubridae: Xenodontinae). *Journal of Herpetology* 30: 269–271.
- Rocha CFD, Bergallo HG, Alves MAS, Van Sluys M (2003) A biodiversidade nos grandes remanescentes florestais do estado do Rio de Janeiro e nas restingas da Mata Atlântica. RiMa Editora, São Carlos, 146 pp.